



# **Nucleus® Source Code Release Notes**

Release 2013.08

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# Chapter 1

## Nucleus Source Code Release Notes

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### Changes and Enhancements

This release incorporates the following changes and enhancements:

- Added Nucleus Process Model Support
- DDL and MMU components have been removed
- Added SSH Server
- Linux Host Support
- Added WebSocket protocol implementation
- Added JSON Generator/Parser Components
- Updates to HTTP Lite component
- P2 Based Installation System
- As of this release the Event Notification Component has been deprecated.
- Selected documentation updates.
- List of bug fixes:
  - In the CAN component: the compiler spits errors if Loopback mode is enabled in CAN on the STM3220G target.
  - In the I2C component: PM\_MAX\_SPECIFIC\_INFO\_LEN macro should not be used.
  - In the SDIO component: the power services implementation in the SDIO function generic driver is not correct.
  - In the SDIO component: the SPI based SD driver requires valid check for identification of the SD,MMC & SDIO card and also for SDSC & SDHC.
  - In the SDIO component: the SDIO Stack should check whether the card can accept new data or the write process is still in progress in the case of Single/Multi Block Transfer.
  - In the SPI component: NU\_SPI\_Init does not allow registering more than one slave.
  - In the USB component: support for SFF8070i subclass USB mass storage devices is broken in Nucleus ReadyStart.

- In the USB component: EHCI Driver - Race condition Related to qh\_info->qtd\_head pointer.
- In the USB component: Invalid check in place on wIndex field of Set\_Feature(TEST\_MODE) request.
- In the USB component: the USB HID Mouse is unable to drag properly.
- In the USB component: add an API to update the MAC address of a device in USB RNDIS class driver dts0100712973.
- In the wireless component: AR6K3 support of FileSystem Storage of Atheros firmware files and dynamic download.
- In the DHCP Server: invalid processing of DHCPREQUEST packet in the DHCP Server.
- In the DHCP Server: Invalid pointer references in the DHCP Server.
- In the DHCP Server: the DHCP server does not wait for a drive to be mounted.
- In the FAT File System: FAT should not be able to create SFN containing "."
- In the Generic Ethernet Driver: DEV\_SET\_HW\_ADDR in ETHERNET\_Ioctl does not use the passed in mac address in the DV\_REQ structure hence the mac address does not change.
- In the IPsec component: IKEv2 double-free called on exchange handle.
- In the IPv6 component: DHCP6\_Reply\_Input references the DHCP6\_TX\_STRUCT after freeing it.
- In the IPv6 component: a link down event attempts to transmit DHCPv6 decline message when the address was obtained via DHCP.
- In the IPv6 component: TCP6\_Input should silently reject connection attempts to multicast addresses.
- In the IPv6 component: Build/Config error when all IPv4 options are turned OFF and IPv6 is enabled.
- In the IPv6 component: turning off the WLAN device power causes DHCPv6 to crash.
- In the NET Stack: UDP\_Append should not return an error if NU\_Resume\_Task fails.
- In the NET Stack: the HTTP Lite server should not wait for network initialization to create the SSL context pointer.
- In the NET Stack: the TCP module of the NET package does not silently reject connection attempts to broadcast addresses.

- In the NET Stack: NU\_DNS\_SD\_Refresh should not return local entries flagged for deletion.
- In the NET Stack: NETBOOT\_Fatal\_Error\_Exit() needs prototype removed from *externs.h*:
- In the NET Stack: Some mDNS parsing does not account for potential header compression.
- In the NET Stack: typo in the NU\_DNS\_SD\_INSTANCE data structure.
- In the NET Stack: MDNS cannot be included in a NET with IPv6 without causing NULL pointer references.
- In the NET Stack: the function NETBOOT\_Resolve\_DHCP4 in the *netboot\_initialize.c* (line 1790) uses a fixed value "DHCPCLIENT" as host name in the options.
- In the NET Stack: mDNS does not trigger conflict resolution in some cases.
- In the NET Stack: DNS-SD does not sync-up to mDNS name conflict updates.
- In the NET Stack: Unconventional use of double pointer h\_addr\_list.
- In the NET Stack: Exception occurs when NU\_Shutdown() is used with NU\_Close\_Socket() for a listening socket with unaccepted connections.
- In the NET Stack: Net6 does not kick off a DHCP client request if no router is present in the system.
- In the NET Stack: dts0100632437 - API NET - Deleting default route that does not exist causes EXCEPTION.
- In the NET Stack: inappropriate deallocation of memory in the *mdns.c* file that causes a crash.
- In the Safe File System: in Safe, wr\_safe\_read treats count = 0 as an error condition.
- In the Safe File System: the Safe function wr\_safe\_delete does not return an error if no files are deleted with the "\*" wildcard.
- In the SNMP component: Nucleus SNMP: Build failures when (INCLUDE\_PPP\_MIB == NU\_TRUE)
- In the SNMP component: SNMP cannot build without the IPSEC component.
- In the SNMP component: cannot compile SNMP when IPv4 is disabled.
- In the SNTPC component: SNTPC Client race condition on removal of last server.
- In the SNTPC component: SNTPC task does not release DNS semaphore before deleting itself.
- In the SQLite component: Fix null-pointer references in SQLite.

- In the SQLite, WLAN components. POSIX with SQLite doesn't export symbols properly.
- In the VFS component: the application can get through VFS NU\_Storage\_Device\_Wait(), fakely indicating device is successfully mounted even if mounting is actually still in progress for a slow storage device.
- In the WLAN component: the Ar6K3 driver crashes if the SSID set in the *.config* file does not exist.
- In the WLAN component: the AR6K3 driver is unable to recover the net buffers.
- In the WLAN component: the AR6K3 driver is unable to recover the net buffers allocated on multiple connect/disconnect events.
- In the WLAN component: multicast group IOCTL's in AR6K3 driver.
- In the WLAN component: cannot probe hidden SSID on AR6K2.
- In the WLAN component: add PMK cache support for AR6KX drivers.
- In the WLAN component: fix WPA supplicant synchronization issues for AR6KX.
- In the WLAN and WPA Supplicant components: AR6002 driver failure.
- In the XPROT component: Nucleus FTP server does not provide a file list for "LIST -a" FTP command.
- In the XPROT component: some client functionality left out in Telnet when breaking up into multiple components.
- In the XPROT component: XPROT cannot build with IPv4 disabled from the *metadata* file.
- In the MW/BSP Interface: CPU\_Get\_Device\_Frequency will not write the frequency correctly.
- In the Kernel package: NU\_Release\_Semaphore fails to cause current task to be pre-empted in certain scenarios when using a mutex.
- In the Kernel package: RVCT build errors when dev mgr is disabled
- In the Kernel package: null pointer exception on storage devices disconnect event or removal from the system with device manager error checking disabled only.
- In the Kernel package: A task priority is not reset to its base priority when it releases a priority inheritance semaphore.
- In the Power Services: memory is not de-allocated if reset of watchdog element fails in NU\_PM\_Create\_Watchdog.
- In the Power Services: hibernate fails to build with Trace disabled.

- In Tracing/Profiling: null pointer Exception in Dynamic Memory profile with TCP communication as profiler interface in QEMU.
- In Tracing/Profiling: System Level - Mismatch between "Task Change priority" log marker and event definition for parameters ordering.
- In Tracing/Profiling: the graph in Nucleus CPU utilization profile is empty with ReadyStart ARM when track\_trace\_overhead is true.
- In Tracing/Profiling: system level - Bug with Task analysis agent on tracing over long periods of time.
- In Tracing/Profiling: target Side - Interrupts lock out in NU\_Trace\_Comms\_Flush API.
- In Tracing/Profiling: target side - unnecessary critical section introduced in driver device manager interface when trace is disabled.

## Known Problems and Workarounds

The following are known limitations that exist in Nucleus Source Code:

- Issue: A benign compiler warning may appear for the following source code file:  
*nucleus/os/services/registry/src/reg\_impl\_mem\_node.c*  
  
This file contains generated source code. There are no negative side effects or impacts associated with this warning.
- Note: The Nucleus Process Memory Management component controls access to memory outside of memory owned by a process. With Memory Management enabled, a function which returns a pointer to memory outside of a process will cause an exception if that pointer is accessed without first sharing the memory containing the pointer. Some of the Nucleus Middleware APIs have this form and it is recommended that no Middleware APIs are called from a process context if the Memory Management component is enabled without first explicitly sharing the memory that is provided by the API.
- Note: The Nucleus Process model does not support the ARM Cortex M architecture and other non-ARM architectures.
- Note: The Nucleus Process model does not support loading processes in kernel-mode.
- Note: The Nucleus Process model does not support loading a process to a user-specified address.
- Note: A compiler warning has been specifically added to source files utilizing the cipher suite component's random seed services. This warning explains that end users must replace the statically-defined seed with suitable dynamically-provided, strong random data in order to ensure maximum security.

- Note: To use ARM RVCT tools with the IPv6 networking components of Nucleus, the `NU_BLOCK_COPY` macro should be mapped to `NU_Block_Copy` in *nucleus/os/include/networking/target.h*.
- Note: The wireless sample assumes that the wireless interface is the only network interface and will not work if there is another active ethernet connection.
- Note: MCAPAPI add-on has been verified against the following version of OpenMCAPAPI `hollisb-openmcapi-267eef17804a`.
- Note: The POSIX component works with the ARM architecture. Other architectures are not supported at this time.
- Note: The wireless demo will not run unless you also have the Atheros WiFi Drivers Add-on.

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<http://supportnet.mentor.com/portal?do=reference.documents&releaseId=201304068&lang=en&prod=C105-S233-G328-P11672>

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